PLEASE AMEND THE CLAIMS AS FOLLOWS:

1. (AMENDED) A microelectronic method of fabricating a semiconductor color imaging device wherein an overcoat-layer is adapted for optimizing integrated long focal length microlens performance in an ordered process sequence comprising:

a semiconductor substrate having a matrix of photodiode elements formed thereon;

depositing a passivation coating encapsulating a metal photoshield layer, wherein the metal photoshield elements are periodically spaced to cover the areas between the photodiode elements;

forming upon a patterned and encapsulated metal photoshield layer a first optically transparent planarizing encapsulant layer;

forming upon an optical spacer and planarizing layer a first patterned color filter layer registered with a subset of the photodiode elements (color pixels);

forming upon a first color filter layer a second planarizing and/or patterned color filter layer in mutual registration with a first color filter layer and a subset of photodiode elements (color pixels);

forming upon a second planarizing and/or color filter layer, a third planarizing, spacer and/or patterned third color filter layer in mutual registration with a first and second color filter layer[s] and a subset of photodiode elements;

forming upon a third planarizing and/or color filter layer a patterned microlens layer mutually registered with the patterned color filter layers and the full array of photodiode elements;

forming upon a microlens layer a high transmittance overcoat layer with a planar (flat) top surface.

50 9. (AMENDED) The method of Claim 1, wherein:

optical performance of the color imager is optimized by preferably selecting a positive type of photoresist for microlens formation and a negative type of photoresist for the high transmittance, high index of refraction overcoat formation.